GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JOHANNESBURG WEST DISTRICT

TERM 1
CONTROLLED TEST
01 MARCH 2023

GRADE 11

MATHEMATICS

MARKS: 50 **DURATION: 1 HOUR**

This question paper consists of 5 pages including this cover sheet.

Copyright reserved

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 3 questions.
2. Answer ALL the questions in your answer book.
3. Use the appropriate and correct numbering system as it is used on this paper.
4. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.
5. Answers only will NOT necessarily be awarded full marks.
6. An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
7. If necessary, answers should be rounded off to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale.
9. It is in your own interest to write legibly and to present your work neatly.

Copyright reserved

QUESTION 1

Solve for x

1.1 $x(5x+2)=0$ (2)

1.2 $x(2x-3)=4$ (correct to TWO decimal places) (4)

1.3 $x^2-x-6\geq 6$ (4)

1.4 $2^{x+2}+2^{x-2}+2^x=42$ (4)

1.5 $\sqrt{4x-11}=2-x$ (5)

[19]

QUESTION 2

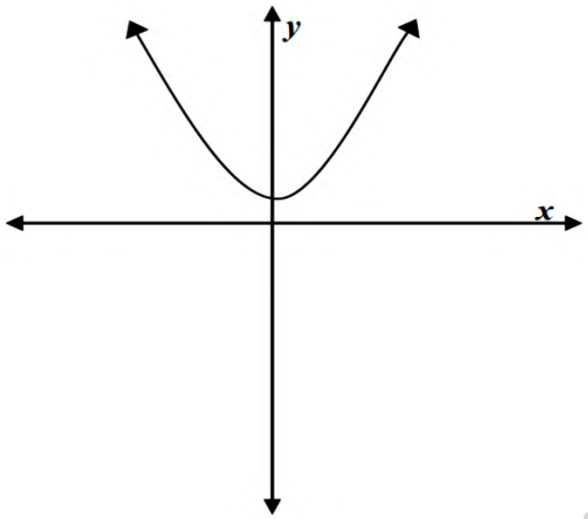
2.1 Simplify, **without using a calculator** $\left(\frac{\sqrt{7^{2011}}-\sqrt{7^{2009}}}{\sqrt{7^{2008}}}+\sqrt{7}\right)^2$ (4)

2.2 Solve for x and y simultaneously if:

$2x-y=3$ and $x^2+5xy+y^2=15$ (6)

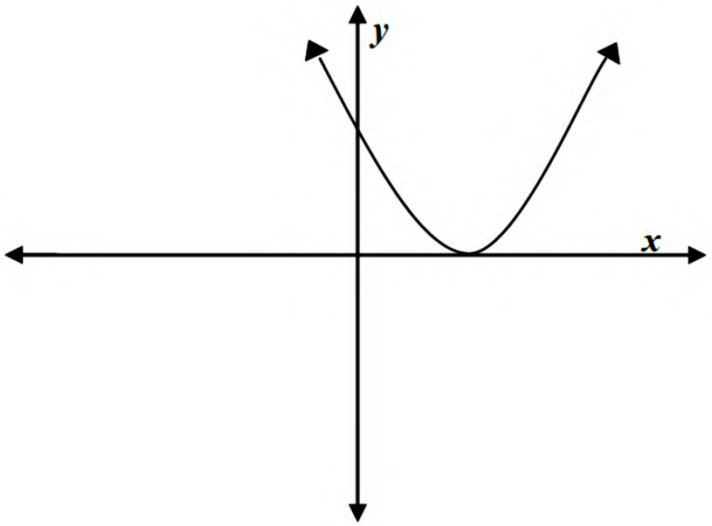
2.3 Discuss the nature of the roots of the following graphs

2.3.1



(2)

2.3.2



(2)

2.4 The solution of a quadratic equation is given by:

$$x = \frac{-2 \pm \sqrt{13 - 2k}}{3}$$

Determine the value of k for which these x-values will be rational.

(3)

[17]

QUESTION 3

3.1 If $\tan\theta = -\frac{2}{3}$ and $\sin\theta > 0$, calculate by using a sketch, the value of

$$\cos\theta \,.\, \sin\theta$$ (4)

3.2 Simplify the following expression to a single trigonometric ratio:

$$\frac{\sin(360° - x).\tan(-x)}{\cos(180° + x).(\sin^2 A + \cos^2 A)}$$ (6)

3.3 Prove the identity:

$$\tan\theta - \frac{\cos\theta}{\sin\theta} = \frac{1 - 2\cos^2\theta}{\sin\theta \,.\, \cos\theta}$$ (4)

[14]

TOTAL = 50 MARKS

Copyright reserved